

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Reallocation and Service Rules for the)	GN Docket No. 01-74
698-746 MHz Spectrum Band (Television)	
Channels 52-59))	
)	

SUPPLEMENT TO EX PARTE ORAL COMMUNICATIONS

On August 2, 2001, ArrayComm, Inc. (hereinafter ArrayComm) took part in an *ex parte* meeting with representatives of the Commission's Wireless Telecommunications Bureau (Bureau) regarding the above-referenced proceeding. At that meeting, ArrayComm agreed to submit supplementary material in writing for Commission consideration. Thus, pursuant to Section 1.206(b) of the Commission's Rules and Regulations, ArrayComm submits the following information.

I. GENERAL COMMENTS

As detailed below, ArrayComm believes that the spectrum under consideration in this proceeding could in time be usable by technologies such as Time Division Duplex (or TDD). ArrayComm's current and primary objective, however, is the acquisition of spectrum under consideration in ET Docket No. 00-221. Thus, while ArrayComm submits these comments in the instant matter, as requested by the Bureau staff, ArrayComm's top priority continues to be ET Docket No. 00-221.

ArrayComm believes that with an appropriate band plan and proper technical standards, the 698-746 MHz band ("Lower 700 MHz band") could be utilized by TDD systems as well as by Frequency Division Duplex (FDD) systems. It is understood that before this spectrum will be

made available under any circumstances, the Commission must resolve a number of other issues, such as Low Power TV, dates for the transition to Digital TV, and outstanding NTSC applications. This filing does not address those issues.

In terms of spectrum requirements, the essential difference between FDD and TDD is that the former requires paired spectrum, while the latter does not. Because TDD operates in a single, unpaired spectrum block, it offers flexibility that can lead to quick market availability. Given the 6 MHz bandwidth that is authorized for TV station operation and given the TV taboos which assure, *inter alia*, that adjacent TV channels are not assigned for use in the same market, TDD can generally be deployed as soon as an existing DTV/NTSC station vacates without impacting other TV stations in that same market. By contrast, an FDD system utilizing, for example, a 2 x 6 MHz allocation, would need two TV stations to clear out before it could become operational. Of course, TDD technologies afford a similar opportunity to markets in which TV channels are already unoccupied today — immediate potential commencement of service — whereas FDD technologies would still require two channels, appropriately spaced, to be unoccupied. Spectrum availability in the Lower 700 MHz band is likely to first occur outside major metropolitan areas, enabling service for less populous areas to be provided first, reversing the typical scenario in which outlying areas are the last to obtain service.

ArrayComm believes that the public interest would be best served in this case by rules that accommodate both TDD and FDD systems. Along with an allocation plan that accommodates both types of systems, there must be technical rules that will enable spectrally adjacent systems to operate without experiencing performance degradation due to mutual interference. ArrayComm would emphasize that adjacent channel interference occurs whenever

different systems are deployed in adjacent spectrum in the same geographic area, be they FDD with FDD, TDD with TDD, as well as FDD with TDD. ArrayComm also notes, however, that this issue can be addressed through good engineering practices and enabling regulations.

GN Docket No. 99-168, dealing with the reallocation of television channels 60-69 (“Upper 700 MHz band”), is instructive in demonstrating that these issues can be difficult to resolve. It also indicates, however, that solutions may be possible. The Commission’s initial inclination was to propose exclusively paired allocations with emissions limits that clearly anticipated the deployment of FDD technologies. Although this was understandable given the history of spectrum usage in the United States, it plainly discriminated against unpaired technologies, such as TDD. TDD operators would have had to bid for both parts of the pair even though they would typically only use one half. Because of the proposed emissions limits, moreover, only one of the halves would be useful for wide-area TDD technologies. To its credit, when this situation was brought to its attention, the Commission endeavored to take corrective action by setting power limits on all frequencies under consideration based on usage (*e.g.*, base, mobile) and not by limits affixed to bands. Theoretically, this action gave all the frequencies equal and independent utility although the allocations remained paired.

Unfortunately, the Commission declined to update its traditional out of band emission (OOBE) requirements to reflect today’s state-of-the-art capabilities. Spurred on by FDD manufacturers and operators, the Commission, in essence, allowed operators to continue to come up with their own solutions to adjacent channel interference situations. With the OOBE rules relatively lax, improved OOBE behavior would be required only when a specific problem necessitated stricter limits.

Potential TDD bidders, however, would be left in a precarious position: loose emissions rules, tempered only by an offer that the Commission would arbitrate in unresolved cases of interference. The projected financial outlays that would be needed to compete for this spectrum in an auction have, to this point, discouraged non-FDD participation, in large part due to the perceived risk of spectrum rules that do not foster co-existence. As an entity that would offer TDD service, ArrayComm reluctantly has concluded that it cannot take that risk.

Ironically, however, in this same docket, the Commission has proposed far stricter OOBE limits to protect public safety systems from commercial FDD systems. Granted, public safety has special requirements. Nevertheless, the Commission has been willing to “push the envelope” to provide that needed protection. ArrayComm would suggest that if a similar course were followed with respect to the general allocation, the benefits of system diversity could be realized.

II. SPECIFIC PROPOSALS

A. OOBE

10 dB more stringent than today's PCS rules. Realistically, the 698-746 MHz band will not be generally available for land mobile occupancy until sometime after 2006, perhaps closer to 2010. Constant improvement in technology provides reasonable expectations that the necessary advances in power amplifier and filter technology will be realized in that time frame. The fact that 33dB more protection is being mandated for public safety systems in the Upper 700 MHz band by the Commission is clear indication that our optimism is well-founded.

B. Band Plan

Identify channels 52-59 as # 1-8. Create four blocks as follows:

- A. 1&7 (FDD, 2 x 6 MHz)
- B. 2&8 (FDD, 2 x 6 MHz)
- C. 3&4 (TDD, 1 x 12 MHz)
- D. 5&6 (TDD, 1 x 12 MHz)

This plan has the following advantages:

- 1. It creates multiple FDD and TDD allocations in each market.
- 2. It provides adequate uplink/downlink separation for the paired FDD systems.
- 3. FDD systems could employ the upper portions of the allocations for their downlinks and the lower portions for their uplinks with the following advantages: (a) TV stations on channels 51 and below would not have to contend with high-powered transmissions in the 12 MHz of spectrum immediately above channel 51; and (b) if FDD systems in the Upper 700 MHz band employed the lower portions of their allocations for downlink, the potential for interference between Upper 700 MHz and Lower 700 MHz band FDD operations would be minimized.
- 4. The allocation sizes are adequate to support internal guard bands as and if necessary to meet the OOBE requirements.

C. Licensing

To foster a diversity of system offerings and operating entities, blocks could be allocated on different geographic bases. A and C could be allocated on an MTA basis while B and D could be national or REA-based allocations.

Of course these ideas require more analysis and discussion. ArrayComm would be pleased to participate in such efforts.

III. CONCLUSION

These relatively minor adjustments to the pending Commission proposals would broaden the availability of services that might be offered which, in turn, will result in more diverse benefits to larger segments of the public.

Respectfully Submitted,

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